REMARKS

An Office Action was mailed on January 10, 2005. Claims 1 – 6 are currently pending in the application. With this response, Applicants amend claims 1, 2 and 4 - 6. No new matter is introduced.

REJECTION UNDER 35 U.S.C. §§ 102, 103

Claims 4 - 5 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,481,526 to Nagata et al. Claims 1, 2 and 4 – 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,097,688 to Ichimura et al. in view of Nagata. Applicants amend claims 1, 2 and 4 – 6 to further clarify the nature of their invention, and respectfully traverse these rejections.

In a Response to Office Action of September 16, 2004, Applicants made the following arguments:

> The Examiner acknowledges that Ichimura fails to disclose Applicant's claimed recorded-layer movement control means for calculating an intermediate value from a maximum value and a minimum value of a focus error signal corresponding to a recorded layer; and upon moving the focused position of the objective lens to the recorded layer, focus pull-in means for performing an automatic adjustment of focus bias when the focus error signal has corresponded to the intermediate value. The Examiner suggests however that this limitation is suggested by Nagata. Applicants respectfully disagree.
>
> Nagata discloses a tracking adjustment mechanism using maximum and minimum tracking error signals (see, e.g., abstract of Nagata). As described for example beginning at column 14, line 20 of Nagata:
>
>> Referring to FIG. 13, another alternative embodiment of the present invention is shown and implemented as an optical data recording/reproducing apparatus capable of readjusting the change in focus due to aging. As shown, the embodiment has a focus offset adjusting section 270. Briefly, in response to a signal for servo control appearing at the beginning of focus servo or a sensed data signal appearing after the start of tracking servo, the focus offset adjusting section 270 determines a focus offset associated with the maximum or substantially maximum amplitude of the signal and readjusts the offset of focus servo by the determined focus offset.

In the illustrative embodiment, at the start of the focus servo control which occurs after the turn-on of the power source or the loading of the disk 1 and with the optical pickup 10 having been located at the home position thereof and the disk being rotated, the focus offset adjusting section 270 detects the amplitudes of the signals adapted for focusing servo and tracking servo control or those of a sensed signal representative of recorded data. Then, the adjusting section 270 determines a focus offset at which the detected amplitude becomes maximum or substantially maximum and, based on the so determined focus offset, readjusts the focus servo offset. With the adjusting section 270, therefore, it is possible to automatically adjust the offset of focusing servo and to thereby insure accurate recording and playback over a long period of time.

Specifically, the focus offset adjusting section 270 is connected between the output of the amplifier 34 and the input of the amplifier 33. The adjusting section 270 automatically adjusts the focus servo offset, or focusing offset, such that the amplitude of the tracking error signal S34 appearing at the start of the focusing servo control and when only the focusing servo control is effective does the amplitude become maximum or substantially maximum. As shown in FIG. 13, the adjusting section 270 has an optimal offset calculating unit 273 and an offset setting unit 274. The optical offset calculating unit 273 calculates an optical focus servo offset in response to the output of the MAX.multidot.MIN calculating section 72. The offset setting unit 274 is implemented by a D/A converter and feeds, on the basis of the output of the calculating unit 273, an output signal S274 thereof to the amplifier 33 to set a focus servo offset. The MAX.multidot.MIN calculating section 72 and optimal offset calculating section 273 may be constituted by calculators or similar independent circuits or may be implemented by a program control stored in a CPU.

(Emphasis added)

Thus, Nagata fails to teach Applicant's the limitations of independent claims 1, 2, and 4 – 6 requiring means for obtaining an intermediate value from a maximum value and a minimum value of a focus error signal which corresponds to defocusing of the objective lens, and to turn on a focus servo which pulls in a focus of the objective lens, with a bias at which the focus error signal corresponds to the intermediate value, when a layer jump is made to another recorded layer.

In sharp contrast to Applicant's claimed invention, according the method taught by Nagata, a focus servo offset is adjusted such that an amplitude of the tracking error signal (difference between maximum and minimum tracking error signal values) reaches a maximum value (see, e.g., FIG. 17 of Nagata). Thus, unlike Applicant's claimed invention, the focus servo offset of Nagata is not adjusted based on an intermediate value from a maximum value and a minimum value of a focus error signal, and moreover, is not even adjusted based on a focus error signal.

> As is further disclosed by Nagata, it is conventionally known to adjust a tracking servo offset on the basis of the sum or the mean value of the maximum and minimum values of a tracking error signal (see, e.g., column 10, line 61 – column 11, line 5 of Nagata). Because a tracking error may occur due to an eccentricity of the disk axis resulting from a shift in the disk center, setting the tracking servo offset according to maximum and minimum values of a tracking error signal enables the midpoints of adjacent tracks to be properly traced.
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> Because these midpoint values are not however necessarily optimal for setting the focus servo offset, Nagata teaches an alternate means for setting the focus servo offset that, unlike Applicant's claimed invention, is not based on an intermediate value of the focus error signal.

The Examiner finds these arguments to be unpersuasive. In particular, the Examiner suggests that FIG. 13 of Nagata "clearly deals with focus error adjustment and NOT tracking error signal", and that "[unit] 72 ...calculates MAX-MIN values ... used by the FE signal amplifier ... to eventually produce signal If". The Examiner also notes that, as "unit 270 is defined as 'focus offset adjusting section' ... [it] clearly deals with focus error adjustment and NOT tracking error signal". Applicants respectfully disagree.

Applicants agree that focus offset adjusting section 270 operates to adjust focus offset. However, as illustrated in FIG. 13, the MAX-MIN calculation performed for the purpose of making a focus error offset adjustment is clearly calculated using the <u>tracking error signal</u> obtained at S34, and <u>not</u> for the focus error signal obtainable at S33 (see, e.g. signals S34, S71, S274 and S31, and, elements 34, 71, 72, 273, 274,31 and 33 of FIG. 13 of Nagata, and column 17, lines 8 -14 of Nagata). Thus, Nagata fails to teach Applicants' claim limitation requiring an <u>intermediate value of focus error signal be calculated from a maximum value and a minimum value of the focus error signal</u> (see, e.g, amended independent claims 1, 2 and 4 – 6).

In addition, both Nagata and Ichimura, alone and in combination, fail to teach or suggest Applicants' claim limitation requiring that the calculated intermediate focus error value be used

to identify a pull-in point for performing an automatic adjustment of focus bias in response to a layer jump to one of a plurality of signal layers.

For example, with reference to Applicants' FIGs. 6 and 7, a pull-in action is first carried out for layer 0 according to a reference level of the focus error signal (step 103), and then a second pull-in action is carried out for a first layer at a pull-in point L1_target determined as an intermediate value between a maximum layer value L1_top and a minimum layer 1 focus error value L1_btm.

In sharp contrast, Nagata discloses a scheme in which servo error signal generating section 30 adjusts the gain of focus error signals so that a drifting intermediate focus error signal is effectively reset to the reference level value (see, e.g., FIG 13 of Nagata). This approach would be ineffectual for Applicants' claimed invention, which instead of maintaining a single reference signal value calculates an intermediate focus error signal value Ln_target for each recordable layer n of the optical disk. Ichimura, which teaches adjusting a distance between two lens elements so that a peak output signal value corresponds to an intermediate focus error signal value, also fails to teach or suggest Applicants' claim limitation requiring that the calculated intermediate focus error value be used to identify a pull-in point for performing an automatic adjustment of focus bias in response to a layer jump to one of a plurality of signal layers.

Accordingly, Applicants respectfully submit that amended independent claims 1, 2 and 4 – 6 are not made obvious by the combination of Nagata and Ichimura, and are therefore in condition for allowance.

CONCLUSION

An earnest effort has been made to be fully responsive to the Examiner's objections. In view of the above amendments and remarks, it is believed that claims 1, 2 and 4 – 6 are in condition for allowance. Passage of this case to allowance is earnestly solicited. However, if for any reason the Examiner should consider this application not to be in condition for allowance, he is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,

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TJB:fd